

CLAIMS

5 1. A flexible, low profile lighting system, comprising:
a flexible printed circuit board substrate, the
substrate adapted to support and electrically interconnect
surface mount electronic components;

10 wherein the plurality of light emitting diodes are
surface mounted on the flexible printed circuit board substrate,
so as to define a conformably bendable lighting array configured
for mounting upon surfaces with compound curvature.

15 2. The lighting system according to claim 1, wherein the
flexible printed circuit board substrate comprises a flex
circuit, the flex circuit pre-manufactured to define mounting
locations for each of the plurality of surface mount light
emitting diodes.

20 3. The lighting system according to claim 1, wherein the
flexible printed circuit board substrate comprises a rigid flex
circuit, the rigid flex circuit pre-manufactured to define
mounting locations for each of the plurality of the surface mount
25 light emitting diodes.

30 4. The lighting system according to claim 1, wherein each
of the plurality of light emitting diodes is disposed on the
flexible printed circuit board substrate in a linear array, each
of the plurality of surface mount light emitting diodes emitting
a light intensity of at least 100 millicandles, evaluated at each
diode's optical axis.

35 5. The lighting system according to claim 1, wherein the
plurality of surface mount light emitting diodes are disposed on

the flexible printed circuit board substrate at a density of approximately 5 light emitting diodes per centimeter.

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6. The lighting system according to claim 4, wherein each of the plurality of surface mount light emitting diodes has a length dimension and a width dimension, and wherein the length dimension is no greater than about 3mm and the width dimension
10 is no greater than about 2mm.

7. A lighting system according to claim 4, wherein the length dimension is no greater than about 2mm and the width dimension is no greater than about 1.5mm.

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8. The lighting system according to claim 4, wherein each of the plurality of surface mount light emitting diodes are surface mounted on the flexible printed circuit board substrate so as to contact at least one adjacent surface mount light emitting diode.

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9. The lighting system according to claim 4, wherein the plurality of surface mount light emitting diodes are configured in an array, the array comprising regular sets of series-connected diodes, the series-connected sets coupled in parallel fashion to one another, the number of light emitting diodes comprising a series-connected set defining a forward voltage drop for the set, the forward voltage drop, in turn, defining a supply voltage value sufficient to activate the diodes of the series-connected set.

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10. The lighting system according to claim 9, wherein each diode has a forward drop in the range of from about 1.7 to about 2.0 volts.

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11. The lighting system according to claim 10, wherein each series connected set comprises 6 surface mount light emitting 5 diodes, coupled in series fashion with a resistor element, each series-connected set operable by a 12.0 volt power supply.

12. The lighting system according to claim 9, wherein each diode has a forward drop of from about 4.0 to about 5.0 volts.

10 13. The lighting system according to claim 12, wherein each series connected set comprises 6 surface mount light emitting diodes, coupled in series fashion with a resistor element, each series-connected set operable by a 30 volt power supply.

15 14. A flexible, low profile lighting system, comprising:
20 a flexible printed circuit board substrate, the substrate adapted to support and electrically interconnect surface mount electronic components;
25 a plurality of surface mount light emitting diodes, wherein the plurality of light emitting diodes are surface mounted on the flexible printed circuit board substrate; and a flexible housing enclosing the flexible printed circuit board substrate and the plurality of surface mount light emitting diodes.

30 15. The lighting system according to claim 14, wherein the flexible printed circuit board substrate is selected from the group consisting of a flex circuit and a rigid flex circuit, each flexible printed circuit board substrate pre-manufactured to define mounting locations for each of the plurality of surface mount light emitting diodes.

35 16. The lighting system according to claim 14, wherein the flexible housing is colored so as to impart a color component to

light emitted from the plurality of surface mount light emitting diodes.

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17. A lighting system according to claim 14, wherein the housing is formed of a clear material, each of the plurality of surface mount light emitting diodes emitting light at a particular wavelength so as to define a color.

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18. The lighting system according to claim 14, wherein each of the plurality of surface mount light emitting diodes emits a light intensity of at least 100 millicandles, evaluated at each diode's optical axis.

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19. The lighting system according to claim 18, wherein each of the plurality of surface mount light emitting diodes emits a light intensity of at least 1000 millicandles, evaluated at each diode's optical axis.

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20. A flexible, low profile lighting system, comprising:
a flexible printed circuit board substrate, having a first end, a second end, and an axis extending between the first and second end, the flexible printed circuit board substrate further including a width dimension measured in a direction transverse to the axis that is less than about 5mm; and
a plurality of surface mount light emitting diodes, disposed on the flexible printed circuit board substrate such that the plurality of diodes emits a light intensity of from about 2000 to about 20,000 millicandles per square centimeter.

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21. The lighting system according to claim 20, wherein the flexible printed circuit board substrate is chosen from the group consisting of a flex circuit and a rigid flex circuit, the flexible printed circuit board substrate pre-manufactured to

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define mounting locations for each of the plurality of the surface mount light emitting diodes.

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22. The lighting system according to claim 21, wherein each of the plurality of surface mount light emitting diodes emits light at a viewing angle of at least 30 degrees.

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23. The lighting system according to claim 22, wherein each of the plurality of surface mount light emitting diodes emits light at a viewing angle of at least 120 degrees.

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